WHAT IS CLAIMED:

1. A method for etching a tapered trench in a layer of material, said layer of material having a mask adjacent a surface thereof which has an opening therein defining a location on the layer of material at which the trench is to be formed, said method comprising:

a. performing a vertical etch process step on said layer of material;

b. enlarging the opening in said mask; and

c. repeating steps a and b above in an alternating manner until a trench has been etched to a desired depth.

2. The method according to Claim 1, wherein said mask comprises a resist layer, and wherein said enlarging step comprises performing a resist etch process step to enlarge the opening in said resist layer.

3. The method according to Claim 2, wherein the resist layer is tapered around a periphery of said opening to facilitate the resist etch process step.

4. The method according to Claim 2, wherein said vertical etch process steps and said resist etch process steps are performed in a multi step process.

5. The method according to Claim 2, wherein said vertical etch process steps and said resist etch process steps are performed in a pulsed etch process.

6. The method according to Claim 1, wherein said trench has a depth of from about 10um to about 100um.

7. The method according to Claim 6, wherein said trench has sidewalls tapered at a slope of from about 45 degrees to about 80 degrees.

8. The method according to Claim 1, wherein said layer of material comprises a semiconductor substrate.

9. The method according to Claim 8, wherein said semiconductor substrate comprises a silicon substrate.

10. The method according to Claim 1, and further including the step of performing a metal deposition step in said trench when said trench has been etched to a desired depth.

11. The method according to Claim 1, wherein said method is incorporated into a process for fabricating a MEMS device.

12. The method according to Claim 1, wherein said method is incorporated in a process for fabricating a high power RF device including a LDMOS and a VDMOS device.

13. The method according to Claim 1, wherein said method is incorporated in a process for fabricating a Z-axis accelerometer.

14. The method according to Claim 1, including the steps of independently controlling one or more of pressure, power, gas flows and time duration during the vertical etch process steps.

15. A method for etching a tapered trench extending into a substrate from a surface thereof, said method comprising:

a. providing a mask adjacent said surface, said mask having an opening defining a location on said substrate at which said trench is to be etched;

b. performing a first vertical etch process step to form a first trench portion at said location;

c. performing a first opening enlarging step for enlarging the opening in said mask;

d. performing a second vertical etch process step to form a second trench portion;

e. performing a second opening enlarging step for further enlarging the opening in said mask; and

f. continuing to perform vertical etch process steps and opening enlarging process steps in an alternating manner until said trench is of a desired depth.

16. The method according to Claim 15, wherein said mask comprises a resist layer, and wherein said opening enlarging steps comprise performing resist etch process steps to enlarge the opening in said resist layer.

17. The method according to Claim 16, and further including the step of tapering said resist layer around a periphery of said opening prior to performing the first vertical etch process step to facilitate performing the resist etch process steps.

18. The method according to Claim 15, wherein said trench has a depth of from about 10um or less to about 100um or more.

19. The method according to Claim 18, wherein sidewalls of said trench have a slope of from about 45 degrees to about 80 degrees.

20. An apparatus for etching a tapered trench in a layer of material, said layer of material having a mask adjacent a surface thereof having an opening defining a location on the layer of material at which the trench is to be formed, said apparatus comprising:

an etching tool for performing vertical etch process steps on said layer of material; and

an opening enlarging tool for performing steps of enlarging said opening in said mask, said etching tool and said opening enlarging tool operating in an alternating manner to form a trench of a desired depth in said layer of material.

21. The apparatus according to Claim 20, wherein said mask comprises a resist layer, and wherein said mask opening enlarging tool comprises a tool for performing resist etch process steps on said resist layer.

22. The apparatus according to Claim 21, wherein said resist layer is tapered around the periphery of said opening to facilitate performing of the resist etch process steps.

23. The apparatus according to Claim 21, wherein said vertical etch process tool and said resist etch process tool are incorporated in a tool that operates in a pulsed manner.

24. The apparatus according to Claim 21, wherein said vertical etch process tool and said resist etch process tool are incorporated in a tool that operates in a multi step manner.